



COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION

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COMMISSIONER

4975 Alliance Drive
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September 16, 2013

Michael W. Garcia, AICP
Fairfax County Department of Transportation
4050 Legato Road, Suite 400
Fairfax, VA 22033

Dear Mr. Garcia,

RE: Dulles Corridor Study

VDOT has completed our review of the Transportation Study report for the proposed amendments for Land Unit A of the Dulles Suburban Center and for the Reston-Herndon Suburban Center and Transit Station Areas in the Upper Potomac section of the Fairfax County Comprehensive Plan; these plan amendments are the Route 28 Station – South Study (Route 28) and the Reston Master Plan Special Study (Reston) and jointly considered the ***Dulles Corridor Study***. The majority of the report was performed in accordance with the Virginia Traffic Impact Analysis Regulations 24 VAC 30-155 in regard to the methodology and assumptions.

VDOT realizes that this submittal and review does not take the place of future TIAs. Detailed reviews will be required in the future individual projects per Virginia Traffic Impact Analysis Regulations 24 VAC 30-155.

VDOT greatly appreciates the considerable time and effort that Fairfax County Department of Transportation (FCDOT) has invested in the ***Dulles Corridor Study***. Overall, the report is detailed and attempts to concisely summarize the results of complex analyses for a large study area for future development scenarios.

The overarching goals and methods of the proposed Comprehensive Plan Amendment appear to be reasonable and consistent with promoting reduced auto dependency, increased transit, bicycle and pedestrian trips by increasing the density of development surrounding the four planned Metrorail stations with mixed use development made possible with higher floor area ratios and lower Level of Service standards. The execution of these goals in a well thought out manner is critical to maintaining the transportation network. Monitoring and phasing of future development as the Transit Oriented Development (TOD) areas and surrounding areas develop is essential to assure an ongoing balance between transportation services and travel demand.

Description of Proposed Plan Amendments and Transportation Impacts

The ***Dulles Corridor Study*** was initiated by the County for the areas around the four Silver Line Metrorail stations from Wiehle-Reston East to Innovation Center in advance of the opening of these

stations. The Wiehle-Reston East Station is anticipated to open in late 2013 with the other three stations (Reston Town Center, Herndon, and Innovation Center) planned to open in 2018. The stated purpose of the study and proposed plan amendments is to make the planned land uses and Comprehensive Plan guidance in these areas more consistent with the County TOD policies adopted in 2007.

The Route 28 Station – South Study area focuses on the land area generally bounded by the Dulles Toll Road to the north, Frying Pan Road to the south, Sully Road (Route 28) to the west and Centreville Road to the east. The proposed plan amendment for this area focuses higher density development within walking distance (1/2-mile of the Innovation Center Metro Station and adjusts the proposed mix of land uses.

The Reston Master Plan Special Study focuses on the land areas surrounding the Wiehle-Reston East, Reston Town Center, and Herndon Metrorail Stations. The proposed plan amendment modifies the proposed lane uses in order to “facilitate the evolution of the areas closest to the station into true mixed-use, walkable, transit-oriented areas.”

In addition to the Existing conditions, the *Dulles Corridor Study* considers two potential future land use scenarios. 2030 COG Round 8 represents the current land use densities and types as proposed in the Fairfax County Comprehensive Plan and adopted by the Metropolitan Washington Council of Governments (MWCOC or “COG”); this scenario is considered the baseline future development against which the proposed plan amendments are evaluated. 2030 Scenario G represents the land use densities and types recommended by the County for adoption as part of the *Dulles Corridor Study* joint Comprehensive Plan Amendments. Table 1 summarizes the Existing and 2030 land scenarios.

Table 1. Dulles Corridor Study Land Use Comparison

Land Use	Existing (2010 - 2012)			2030 COG Round 8 (Current Comp Plan)			2030 Scenario G (Proposed Amendments)		
	Reston	Route 28	Total	Reston	Route 28	Total	Reston	Route 28	Total
Residential (Units)	5,860	3,309	9,169	16,382	7,002	23,384	24,559	9,289	33,848
Residential (msf)	5.86	3.97	9.83	19.66	8.40	28.06	29.47	11.15	40.62
Office (msf)	20.98	4.76	25.74	22.61	5.42	28.03	27.32	8.38	35.70
Retail (msf)	1.09	0.004	1.10	0.99	0.21	1.20	1.63	0.79	2.42
Industrial (msf)	0.84	0.035	0.87	0.70	0	0.70	0.51	0	0.51
Institutional (msf)	2.10	0.15	2.25	1.74	0.28	2.03	2.09	0.15	2.24
Hotel (msf)	0.94	0.86	1.80	1.54	0.69	2.23	3.00	1.18	4.18
Total Development	31.81	9.77	41.59	47.26	15.00	62.26	64.03	21.64	85.67

As seen in Table 1, the proposed 2030 Scenario G reflects an increase in the total development within the *Dulles Corridor Study* area compared to the 2030 COG Round 8 land use. An additional 10,500 residential units are anticipated as well as approximately 7 million, 1.2 million, and 2 million additional square feet of office, retail, and hotel space, respectively.

The report proposes specific Floor Area Ratios (FARs) for areas within each of the Transit Station Areas. These Floor Area Ratios decrease as distance from the Metrorail Station increases; this approach would focus the higher density development closest to the Metrorail station, with the goal of encouraging higher levels of transit usage. An example of the proposed development intensities are provided in Table 2 for the Route 28 Innovation Center Station area.

Table 2. Route 28 Area – Planned Land Use Intensity

Distance from Metrorail	Range of Intensity (FAR)
Tier 1: Within ¼-mile	2.0 to 3.0 FAR
Tier 2: Between ¼-mile and ½-mile	1.0 to 2.0 FAR
Beyond ½-mile	0.75 to 1.5 FAR

Travel demand forecasts for both the 2030 COG Round 8 and 2030 Scenario G land use scenarios were conducted using Version 2.2 of the MWCOG TPB model (adopted model version when the *Dulles Corridor Study* was initiated) and the WMATA Post-Processor Mode Choice Model. The output from the WMATA Post-Processor model was then fed into the Fairfax County Subarea model to conduct the assignment step. The study indicates that the total motorized trips (automobile + transit) within the study area would increase by approximately 37 percent to 519,137 daily trips under Scenario G compared to the COG Round 8 land use. Internal trips (trips beginning and ending within the Study Area) would account for 21.5% of the total daily motorized trips for Scenario G, compared to 15.2% for the COG Round 8 and 10.3% for the 2005 Base Year condition. The 2030 Scenario G land use also is projected to result in a higher transit mode share (9.9%) for home-base work daily person trips compared to the 2030 COG Round 8 scenario (8.2%); the 2005 Base Year transit mode share is 2.7% within the Study Area.

A total of 24 existing intersections were included in the operational analysis. Measures of effectiveness including intersection LOS, seconds of delay, and queue lengths (50th and 95th-percentile) were reported. Results were provided for the following scenarios: 2013 Existing, 2030 COG Round 8 (with Comprehensive Plan improvements but no additional mitigation), and 2030 Scenario G (with Comprehensive Plan improvements and additional mitigation). Table 3 summarizes the number of intersections projected to operate acceptably (LOS A – D) or unacceptably (LOS E or LOS F) during the AM and PM peak periods for each of the land use scenarios evaluated in the *Dulles Corridor Study*.

Table 3. Intersection Analysis Summary

Scenario and Peak Period		Number of Intersections Operating at:		
		LOS A – D	LOS E	LOS F
Existing (2013)	AM	15	3	6
	PM	14	3	7
2030 COG Round 8 (No Additional Mitigation)	AM	9	4	11
	PM	9	5	10
2030 Scenario G (With Additional Mitigation)	AM	14	4	6
	PM	15	3	6

Additional detail identifying intersections expected to experience degradation in operations and movements with insufficient storage based on the queuing analysis are summarized in the following pages.

The following transportation improvements are assumed to mitigate the impact of the proposed land use changes associated with the Comprehensive Plan Amendments. Improvements not currently shown on the County's Transportation map are shown in bold.

1. Route 28 – widen to 10 lanes with HOV
2. Sunrise Valley Drive – extend south of Frying Pan Road
3. Frying Pan Road – widen to 6 lanes between Route 28 and Centreville Road
4. **River Birch Road – extend from Sunrise Valley Drive to Frying Pan Road**
5. Rock Hill Road Overpass – add 4 lane bridge from Innovation Avenue to Sunrise Valley Drive/Sayward Boulevard
6. Fairfax County Parkway – widen to 6 lanes with HOV
7. **Fairfax County Parkway/Sunrise Valley Drive – grade separate**
8. Fox Mill Road – widen to 4 lanes from Reston Parkway to Monroe Street
9. West Ox Road – widen to 4 lanes from Lawyers Road to Centreville Road
10. Monroe Street – widen to 4 lanes from West Ox Road to Herndon
11. **Town Center Parkway Underpass**
12. **Pinecrest Road – extend from South Lakes Drive to Sunrise Valley Drive**
13. **Reston Parkway – widen to 6 lanes from South Lakes Drive to Baron Cameron Avenue**
14. Soapstone Overpass – add overpass over Dulles Toll Road from Sunset Hills Road to Sunrise Valley Drive at Soapstone Drive
15. **South Lakes Overpass – add overpass over Dulles Toll Road from Sunset Hills Road to Sunrise Valley Drive at South lakes Drive**
16. **Reston and Route 28 – New grid of streets**
17. **Intersection improvements at 15 of 24 intersections evaluated in Study**

The analysis presented in the report for Scenario G also assumes several intersection improvements which have been suggested by MWAA at the ramp terminal intersections of the Dulles Toll Road. These improvements have not been formally adopted in a plan by MWAA and may be subject to change.

The following transit service improvements are also proposed to serve the study area under the 2030 Scenario G land use:

1. Improve service frequencies to match Fairfax County Transit Development Plan
2. Bus Rapid Transit (BRT) along Centreville Road from I-66 to the Innovation Center Metrorail Station and into Loudoun County (10-minute headways)

3. Express Bus on Route 28 from I-66 to Route 7 in Loudoun County with 30 minute frequencies
4. Express Bus on Fairfax County Parkway from the Fairfax Center area to the Herndon Metrorail Station with 30 minute frequencies.

VDOT findings and comments

The following detailed comments regarding both studies submitted are compiled together below. Those that specifically reference one document are noted as either the ***Transportation Study*** or ***Corridor Study***. The comments have been grouped into three categories: cumulative impacts, clarifications, deficiencies and suggestions.

Cumulative Impacts

1. Does the modeling reflect the trip generation from the proposed “densification” of Tysons Corner as well as the additional developments in Loudoun County (Dulles World Center) near the Route 28 station area? What REGIONAL background development is included? Per the Tysons Corner Studies, the Dulles Toll Road is over capacity. However, based on the freeway link model results contained in Tables 2.5 and 2.6 of Appendix 2 of the ***Transportation Study***, none of the freeway links on Route 28 or the Dulles Toll Road are expected to operate beyond their capacity ($v/c > 1.0$) in the morning or afternoon peak hour with the future land use proposed by the plan amendment (Scenario G). This inconsistency with other studies indicates that not all regional development is considered within the travel demand model and that this study may not accurately represent the impact on these roads.
2. It appears that only a relatively small area was considered in the study. What is the downstream impact?
3. It should be noted that the queuing and level of service results may be worse than indicated in the studies due to the failing intersections and over-capacity links. SimTraffic may reveal gridlock throughout the network.

Clarifications

Land Use Assumptions and Travel Demand Model Methodology

4. Please provide narrative and explain how the job-to-household data on page 10 of the ***Transportation Study*** was obtained. It should be noted that while the 4:1 ratio is still not satisfactory, it shows significant improvement over the existing scenario which is commendable.

5. To estimate the residential square footage, factors of 1000 and 1200 sf per dwelling unit were assumed for existing and 2030 scenarios, respectively (see pages 5 and 6 of the *Corridor Study*). Please explain the inconsistency. These values may be applicable to multifamily dwelling units and are not suitable for town homes. Please explain.
6. As mentioned on page 17 of the *Transportation Study*, why was a 2005 model run used for model validation instead of a more recent year, and what year of traffic counts were used?

Traffic Volumes

7. 2010 traffic counts increased by a growth rate of 1% per year were used at 21 of the intersections analyzed to bring them to 2013. Please provide an explanation for this growth rate.
8. Some of the 2030 volumes, more than expected, shown in Figures 4.9A-C of the *Transportation Study* decrease when compared to existing volumes. Please revisit / explain.

Improvements/Mitigation

9. Per the study, Wiehle Station is expected to open at the end of this year. The desired land use changes that this Comprehensive Plan Amendment hopes to affect will not occur for some time. As a result the demand on the roadway network will be greater initially while higher density mixed-use development is being established. How will this be addressed and will the transportation network suffer in the short term?
10. A change from the current Level of Service standard of D to E is proposed within ½ mile of the planned rail stations (TOD areas). It appears that this standard will apply to the following 10 intersections. Three of these intersections do not meet this standard with the proposed mitigation measures. Knowingly establishing an unattainable standard does not address future traffic congestion. Please explain.
 - a. Fairfax County Parkway and Sunrise Valley Drive
 - b. Reston Parkway and Sunrise Valley Drive
 - c. Reston Parkway and Dulles Toll Road eastbound ramps
 - d. Reston Parkway and Dulles Toll Road westbound ramps
 - e. Reston Parkway and Sunset Hills Road
 - f. Reston Parkway and Bluemont Way
 - g. Wiehle Avenue and Sunrise Valley Drive
 - h. Wiehle Avenue and Dulles Toll Road eastbound ramps
 - i. Wiehle Avenue and Dulles Toll Road westbound ramps
 - j. Wiehle Avenue and Sunset Hills Road.
11. The Tiered Approach on page 20 of the *Transportation Study* indicates that signal optimization would be the first step for mitigation, but for 2030 Scenario G, it appears that geometric improvements were considered before signal optimization. Please explain.
12. For Full Mitigation of Scenario G on page 67 of the *Transportation Study*, signal adjustments were considered as an improvement. Please explain what FCDOT considers signal adjustments in addition to optimization (Signal optimization has already been considered as an improvement).

Trip Reductions

13. The trip reduction assumptions within the TOD districts seem to be generally consistent with professional studies of TOD trip generation. What assumptions were used regarding trip reduction in the non-TOD portions of the study area? Research suggests that the extent of reduction in trip making declines with distance from transit stops and distance from the central business district.
14. Trip reduction goals for the project are shown on page 20 of the *Corridor Study*. What are the final trip reduction percentages? Please provide a table showing how much each factor (TDM, TDP, TOD, internal capture, pass-by) contributes to trip reductions.
15. The trip reduction goals shown in Table 5 on page 20 of the *Corridor Study* are lower than those used in the Tysons Corner studies. Concerns remain as to whether these are achievable. Please explain.
16. It is unclear how the anticipated transit ridership numbers reported throughout the *Transportation Study* relate to one another, how accurate they are and whether the metro will be able to accommodate the anticipated riders. Tables 4.1 – 4.5 report various types of trips and their anticipated quantity, Tables 4.6 and 4.7 report percentages of types of trips, Table 4.8 reports total transit trips and Table 4.12 reports transit shares by station. However, none of these numbers or percentages clearly correlates to one another. Furthermore, the text on page 70 indicates that 4300 passengers is the maximum load for the six-hour peak period, however, when compared to the total Transit Trips in Table 4.8 of 13,879, this is only 31 percent of the total. Please clarify.

Synchro Inputs

17. Please check the Synchro files and make sure that the signal phasing for all intersections is correct. For example, the signal phasing for Sunrise Valley Drive/Reston Parkway (#7) does not appear to be correct for all scenarios. The Sunrise Valley Drive approaches should be split phased.
18. At Sunrise Valley Drive/Frying Pan Road (#1), the NB/SB through volume is low (less than 100 vph) for the future 2030 scenarios. Are two through lanes needed?
19. The Synchro files for 2030 Scenario G show four receiving lanes on NB Centreville Road at Sunrise Valley Drive, and then the 4th lane is dropped. What is the 4th lane for?
20. Compared to the 2030 COG Round 8 scenario, the AM and PM intersection entering volumes for 2030 Scenario G do not change consistently. For example, for the following intersections the AM volume decreased, but PM volumes increased: Sunrise Valley Drive/Frying Pan Road (#1), Wiehle Avenue/DTRWB ramps (#19) and Hunter Mill Road/Sunrise Valley Road (#21).
21. Please check all volume inputs in the Synchro files. For example, for Scenario G in the PM peak hour at Centreville Road/Dulles Toll Road WB ramps the SB volumes are shown as 0.

Synchro Results

22. On page 22 of the *Transportation Study* it is stated that “Synchro results were averaged...” What was averaged? Synchro does provide MOEs per lane group, approach, and the whole intersection. Please explain the methodology on how the average was derived, and its relevance.
23. Compared to 2013 existing conditions, some intersections (#8, #12, #13 and #23) for 2030 COG Round 8 scenario have increased volumes but decreased delays with the same lane configurations. Please explain.
24. A comparison between 2030 COG Round 8 and Scenario G results should be provided in order to support the statement that Scenario G performs better than the COG Round 8 scenarios on the transportation network (included in 4.6 Summary and Next Steps).
25. A number of signalized intersections within the study area were included in the Synchro analysis but are not included in the summary tables and figures. It appears that the decision to exclude these intersections was based on an urban local functional classification. Please clarify why these intersections are not included within the text, tables and figures of the study.

Measures of Effectiveness

26. How would levels of service on the toll road and toll road ramps be impacted under “COG Round 8” and “Scenario G?”

Deficiencies

Trip Reduction

27. Table 5 of the *Corridor Study* contains the trip reduction goals for the study area. Does Fairfax County have a plan in place to reach these goals? If so, please provide a reference to the appropriate plan in the report and discuss how progress towards these goals will be monitored. A menu of specific Travel Demand Management measures that are envisioned to reach these trip reduction goals should be included in the Comprehensive Plan.
28. Considering the proposed land uses (specifically the 1,632,657 sf retail) shown in Table 1 of the *Corridor Study* and the location of the Rt 28 Station Area within a suburban setting with limited retail opportunities, VDOT is concerned that the actual mode split estimation may be optimistic. A concern remains that the external trip count into this area may be much higher, and those trips will be via automobile.

Synchro Analysis

29. The entire study area should be modeled as one single network. It is currently shown as five separate arterials without the Dulles Toll Road. It is imperative that the Dulles Toll Road (DTR) is included in all modeling as a single integrated simulation system. As mentioned in comment 1, the cumulative impact of other development and travel in the area adjacent to those considered in this Comprehensive Plan Amendment must be included to accurately understand travel in the study area.

30. Furthermore, and in accordance with the recently adopted VDOT's Traffic Operations Analysis Tool Guidebook (TOATG), Synchro is not the preferred tool for analysis of integrated networks. Use of VISSIM or CORSIM is currently required.
31. All components of the freeway system (basic freeway segment, weave and merge / diverge) should be analyzed along with the connecting roadways so that the operational functionality of DTR vis-à-vis street network is known. The operation of the surface street network, as it is currently shown, without the DTR is inadequate in predicting the future traffic conditions in this area.
32. The Synchro printouts in Attachment 4 of the *Transportation Study* do not match many of the tables and figures within the report for Scenario G. Observations and conclusions reported in this memo reflect the information from the Synchro printouts where there is a discrepancy. Please verify all volume inputs in Synchro. For example, Scenario G, PM Peak, the southbound Centreville Road approach at the Dulles Toll Road westbound ramps is entered as 0 vehicles in Synchro, but should be 1,664 vehicles.
33. Traffic counts for the 24 study intersections were not provided; therefore, none of the data used in Synchro based on the counts can be confirmed. Were the volumes independently verified by the analyst?
34. Default values were used for a number of data entries including: lane widths (12 feet), grades (0%) and heavy vehicle percentages (2%). Please confirm that these values are appropriate for the Study Area.
35. Peak hour factors of 1.0 were used for nearly all analyses. Please justify the use of 1.0 or modify the analyses appropriately.
36. Minimum green times are insufficient to accommodate pedestrians wishing to cross. Pedestrian phasing / timings must be included in all 2030 Synchro models at all pertinent intersections. This change will significantly affect the levels of service at a number of intersections.
37. Bus blockages were entered for the intersection of Centreville Road and Sunset Valley Road but no other intersections. A consistent approach to the use of the bus blockage input should be applied.
38. Please check all the Synchro files and ensure that they are free of errors, particularly fatal errors which prevent the user from running SimTraffic simulations. Several issues were noted with inconsistencies with input lanes and receiving lanes.
39. Considering the proposed land uses (specifically the 1,632,657 sf retail) shown in Table 1 of the *Corridor Study* and the location of the Rt 28 Station Area within a suburban setting with limited retail opportunities, VDOT is concerned that the actual mode split estimation may be optimistic. A concern remains that the external trip count into this area may be much higher, and those trips will be via automobile.
40. Considering the proposed land uses (specifically the 1,632,657 sf retail) shown in Table 1 of the *Corridor Study* and the location of the Rt 28 Station Area within a suburban setting with limited retail opportunities, VDOT is concerned that the actual mode split estimation may be optimistic. A concern remains that the external trip count into this area may be much higher, and those trips will be via automobile.

41. For existing conditions, the intersections of Sunrise Valley Drive/Frying Pan Road, Frying Pan Road/Centreville Road and Centreville Road/Coppermine Road are included in the Rt. 50 Synchro files but not included in the Dulles corridor Synchro files. It appears that the coordinated cycle length for the intersections of Centreville Road are different in these two files. Please include all intersections analyzed in this study in one file for each peak hour. This also applies to the 2030 COG Round 8 scenario. Cycle lengths should be consistent.
42. In the Synchro files, please check lane configurations thoroughly and code turn bays at intersections appropriately to make the number of lanes on roadway segments reasonable. For example, 1. For Scenario G, no turn bays are coded for the WB approach at Frying Pan Road/Sunrise Valley Drive and the WB segment is shown as 6 lanes which doesn't seem reasonable; 2. Centreville Road between the ramp intersections at Dulles Toll Road has one NB lane and three SB lanes.
43. Some of the proposed cycle lengths are 126 and 162 seconds. Please use cycle lengths that are multiples of 10 or 5.
44. Clustered Intersections with a single controller such as Sunset Hills Road/Hunter Mill Road (#24), and Dulles Toll Road WB On-Ramp/Hunter Mill Road (#23) should be analyzed as such in all 2030 scenarios.

Improvements/Mitigation

45. Please address the potential impacts of the suggested MWAA ramp terminal intersection improvements not being implemented. How likely are these improvements? How would alternate mitigation measures be developed to help mitigate the additional impacts?
46. Both studies propose to accept LOS F for some intersections based on the rationale of providing a transportation system which is balanced and supportive of transit, pedestrians and bicycles. This is an important principle, but the huge scope and long development time-frame of the planned development justify planning for full mitigation of Scenario G. It is not clear how the road improvements would preclude a bike and pedestrian friendly environment. Full mitigation to LOS E should be included in the Comp Plan. If a decision is made to ignore the possible future need for right of way reservation for some of the improvements, it may be difficult to reverse that decision in the future if the need for additional right of way becomes apparent.

Tables and Figures

47. As previously mentioned, the Synchro printouts in Attachment 4 do not match many of the tables and figures within the report for Scenario G. Please update the appropriate figures and tables or Synchro analysis, depending on which item is correct.
48. Tables 2.4 and 2.5 of the **Transportation Study** are the same. Table 2.4 should show the net change in land use from Existing to Scenario G.
49. In Figure 4.9B at Intersection 9 of the **Transportation Study**, the westbound right turn lane should not be shown as proposed as it is also shown as existing on Figure 4.2B.
50. Figure 4.9A of the **Transportation Study** shows two SB thru lanes for Rt 28 and 62 VPH in the a.m. and p.m. peak hour respectively. Please provide a better lane utilization to assist with the more than 3000 VPH right turn volume.

51. In Table 4 of the *Corridor Study* McNair Farms Drive should be replaced with a different example as it is not in Land Unit A.

Measures of Effectiveness

52. While the County finds that the transportation network will generally perform to higher levels of service at most intersections under Scenario G with optimization, the report points out that one congestion metric, vehicle hours of congestion, will increase slightly. Even if the inconvenience to automobile travelers is accepted as part of the price of creating more walkable transit-supportive communities, however, there could be significant concerns arising from the fact that emergency vehicles and rubber-tired transit or paratransit vehicles could be hampered by gridlock. The County should consider the ability to effectively serve these areas with EMS and transit.
53. The overall intersection level of service for the proposed land use scenario (Scenario G) after optimization and mitigation, is below the proposed standard (E for TOD, D others) at the following intersections (overall delay is also indicated). Each of these locations is listed in Table 4.18 as needing further improvements that are not recommended. Left unaddressed the delay experienced at the intersections will impact not just the intersections, but the roadway links and ripple through the roadway network, creating gridlock. How will the deficiencies be addressed at these intersections?
- Sunrise Valley Drive and Frying Pan Road – PM (174.4)
 - Centreville Road and Sunrise Valley Drive – PM (81.0)
 - Centreville Road and Dulles Toll Road EB ramps – AM (89.0)
 - Reston Parkway and Sunset Hills Road – AM (150.6), PM (217.7)
 - Reston Parkway and New Dominion Parkway – PM (86.0)
 - Wiehle Avenue and Sunrise Valley Drive – AM (147.7)
 - Wiehle Avenue and Sunset Hills Road – AM (146.3), PM (272.2)
 - Hunter Mill Road and Sunrise Valley Road – AM (258.0), PM (149.8)
 - Hunter Mill Road and Dulles Toll Road WB ramps – AM (67.8), PM (108.7)
 - Hunter Mill Road and Sunset Hills Road – AM (63.6), PM (65.5)
54. Comparison of the COG Round 8 and Scenario G Synchro analyses, indicates that the overall intersection level of service degrades at the following intersections. It should be noted that the COG Round 8 analysis results do not include mitigation measures and the Scenario G results do. Comparing COG Round 8 without mitigation measures to Scenario G with mitigation measures is misleading because the levels of service reported for COG Round 8 appear worse than they would be with mitigation measures and downplays the level of degradation in delay and level of service expected when considering the Scenario G land use.

Table 4. Comparison of COG Round 8 and Scenario G AM Peak Hour LOS and Delay

Intersection – AM Peak	#	COG Round 8		Scenario G	
		Delay	LOS	Delay	LOS
Centreville Rd/Dulles Toll Rd EB Ramps	5	42.5	D	89.0	F
Fairfax County Pkwy/Spring St	10	53.3	D	65.2	E
Reston Pkwy/Sunset Hills Rd	14	148.8	F	150.6	F
Wiehle Ave/Sunrise Valley Dr	17	87.4	F	147.7	F
Wiehle Ave/Sunset Hills Rd	20	79.8	E	146.3	F
Hunter Mill Rd/Sunrise Valley Dr	21	77.0	E	258	F
Hunter Mill Rd/Dulles Toll Rd WB Ramps	23	31.3	C	67.8	E

Table 5. Comparison of COG Round 8 and Scenario G PM Peak Hour LOS and Delay

Intersection – PM Peak	#	COG Round 8		Scenario G	
		Delay	LOS	Delay	LOS
Centreville Rd/Dulles Toll Rd EB Ramps	5	26.4	C	39.2	D
Reston Pkwy/Dulles Toll Rd EB Ramps	12	13.6	B	33.8	C
Reston Pkwy/Sunset Hills Rd	14	211.6	F	217.7	F
Reston Pkwy/New Dominion Pkwy	16	73.2	E	86.0	F
Wiehle Ave/Sunset Hills Rd	20	183.5	F	272.2	F
Hunter Mill Rd/Sunrise Valley Dr	21	56	E	149.8	F
Hunter Mill Rd/Dulles Toll Rd WB Ramps	23	68.4	E	108.7	F
Hunter Mill Rd/Sunset Hills Rd	24	48.2	D	65.5	E

55. Based on the non-freeway link results contained in Appendix 2 of the *Transportation Study*, there are several roadway links within the study area that are expected to operate beyond their capacity with the proposed plan amendment (Scenario G). The v/c ratios at these locations are also greater than those for the currently adopted future land use conditions (COG Round 8) for nearly all locations.

Table 6. Comparison of COG Round 8 and Scenario G Non-Freeway Link Analysis Results

Location ID and Direction		Roadway	Period	COG Round 8 v/c	Scenario G v/c
1	EB	Frying Pan Road	AM	1.01	1.08
1	WB	Frying Pan Road	PM	1.11	1.32
2	SB	Sunrise Valley Road	PM	1.14	1.53
6	EB	Sunrise Valley Road	PM	1.30	1.87
9	EB	Sunrise Valley Road	PM	0.89	1.03
14	SB	Fairfax County Parkway	AM	1.07	1.19
17	EB	Sunrise Valley Road	AM	1.15	1.29
20	NB	Reston Parkway	AM	1.24	1.24
20	SB	Reston Parkway	PM	1.13	1.49
23	EB	Sunrise Valley Road	AM	0.88	1.08
24	WB	Sunrise Valley Road	AM	1.00	1.10
26	EB	Sunset Hills Road	AM	0.73	1.46
26	EB	Sunset Hills Road	PM	0.80	1.64
28	EB	Sunset Hills Road	AM	0.91	1.30
28	WB	Sunset Hills Road	PM	1.43	1.05
31	NB	Hunter Mill Road	AM	1.16	1.12

56. Based on the queuing analysis reported in Attachment 4 of the *Transportation Study*, the 50th percentile queues are expected to extend beyond the storage provided or into the adjacent study intersection at the locations listed below. (Not all storage lane lengths were included for the intersection of Sunrise Valley Drive and Frying Pan Road.)

a. Morning Peak

- i. Centreville Road and Coppermine Road – eastbound left turn
- ii. Centreville Road and Sunrise Valley Road – westbound right and southbound left turns
- iii. Fairfax County Parkway and Dulles Toll Road EB ramps – eastbound left turn
- iv. Fairfax County Parkway and Spring Street – northbound left turn
- v. Reston Parkway and Sunrise Valley Road – eastbound through
- vi. Reston Parkway and Dulles Toll Road WB ramps – westbound right turn and northbound through
- vii. Reston Parkway and Sunset Hills Road – eastbound through, northbound left and right turns
- viii. Reston Parkway and New Dominion Parkway – northbound and southbound left turns and southbound through
- ix. Wiehle Avenue and Sunrise Valley Drive – eastbound left turn
- x. Wiehle Avenue and Sunset Hills Road – eastbound right, northbound left and southbound left turns
- xi. Hunter Mill Road and Sunrise Valley Drive – eastbound and northbound left turns and northbound through

b. Afternoon Peak

- i. Sunrise Valley Drive and Frying Pan Road – eastbound through
- ii. Centreville Road and Frying Pan Road – eastbound right turn
- iii. Centreville Road and Coppermine Road – eastbound left turn
- iv. Centreville Road and Sunrise Valley Road – eastbound left, westbound left, westbound right, northbound right and southbound left turns
- v. Centreville Road and Dulles Toll Road EB ramps – eastbound left turn, northbound right turn and southbound through
- vi. Fairfax County Parkway and Sunrise Valley Road – eastbound and westbound left turns
- vii. Fairfax County Parkway and Dulles Toll Road EB ramps – eastbound left turns
- viii. Fairfax County Parkway and Dulles Toll Road WB ramps – westbound left turn
- ix. Reston Parkway and Sunrise Valley Road – westbound left turn, westbound through and westbound right turn
- x. Reston Parkway and Dulles Toll Road WB ramps – westbound right turn and southbound through
- xi. Reston Parkway and Sunset Hills Road – eastbound right turn, westbound left turn, northbound through and southbound through
- xii. Reston Parkway and Bluemont Way – southbound through
- xiii. Reston Parkway and New Dominion Parkway – eastbound left, eastbound right, westbound left and southbound left turns and northbound and southbound throughs
- xiv. Wiehle Avenue and Sunrise Valley Road – eastbound left and westbound right turns
- xv. Wiehle Avenue and Dulles Toll Road WB ramps – southbound through
- xvi. Wiehle Avenue and Sunset Hills Road – eastbound left, eastbound right, northbound left turns and northbound through

- xvii. Hunter Mill Road and Sunrise Valley Road – northbound left turn and northbound through
 - xviii. Hunter Mill Road and Dulles Toll Road EB ramps – eastbound right
57. Based on the queuing analysis reported in Attachment 4 of the *Transportation Study*, the 95th percentile queues are expected to extend beyond the storage provided, or into the adjacent study intersection, at the locations indicated in the previous comment and at the additional locations listed below.

a. Morning Peak

- i. Sunrise Valley Drive and Frying Pan Road – eastbound through
- ii. Centreville Road and Frying Pan Road – northbound left turn
- iii. Centreville Road and Sunrise Valley Road – westbound left turn
- iv. Centreville Road and Dulles Toll Road EB ramps – eastbound left turn and southbound through
- v. Fairfax County Parkway and Dulles Toll Road EB ramps – eastbound right turn
- vi. Fairfax County Parkway and Spring Street – eastbound left turn and southbound through
- vii. Reston Parkway and Sunrise Valley Road – eastbound left, westbound left, westbound right and northbound right turns
- viii. Reston Parkway and Dulles Toll Road EB ramps – eastbound right turn
- ix. Reston Parkway and Sunset Hills Road – westbound left, southbound left turns
- x. Reston Parkway and New Dominion Parkway – eastbound right, westbound left, westbound through
- xi. Wiehle Avenue and Sunrise Valley Drive – southbound left turn
- xii. Hunter Mill Road and Dulles Toll Road EB ramps – eastbound right turn and southbound left turns
- xiii. Hunter Mill Road and Sunset Hills Road – eastbound left and northbound left turns

b. Afternoon Peak

- i. Centreville Road and Frying Pan Road – westbound left turn
- ii. Fairfax County Parkway and Sunrise Valley Road – westbound right turn
- iii. Fairfax County Parkway and Spring Street – eastbound left and southbound through
- iv. Reston Parkway and Sunrise Valley Road – eastbound left turn
- v. Reston Parkway and Dulles Toll Road EB ramps – eastbound left turn
- vi. Reston Parkway and Dulles Toll Road WB ramps – westbound right turn
- vii. Reston Parkway and Sunset Hills Road – westbound right, northbound left and southbound left turns
- viii. Reston Parkway and Bluemont Way – eastbound left turn
- ix. Reston Parkway and New Dominion Parkway – westbound right and northbound left turns
- x. Wiehle Avenue and Sunrise Valley Road – southbound left turn
- xi. Wiehle Avenue and Dulles Toll Road WB ramps – westbound left and right turns, westbound through

- xii. Wiehle Avenue and Sunset Hills Road – westbound left turn
- xiii. Hunter Mill Road and Sunrise Valley Road – eastbound and southbound left turns
- xiv. Hunter Mill Road and Dulles Toll Road WB ramps – westbound left turn, northbound left turn and southbound through
- xv. Hunter Mill Road and Sunset Hills Road – eastbound left turn and northbound through

Suggestions

- 55. The study includes an extensive list of geometric improvements and travel demand reduction strategies which may not necessarily materialize. For example Figure 4.6-C of the *Transportation Study* shows 11 lanes across Wiehle Ave. VDOT recommends including a reverse engineering analysis where reasonable transportation facility supply is assumed for 2030 and travel demand, in terms of land development, is desired. Essentially, how much development can a reasonably assumed transportation network handle?
- 56. Because of the levels of vehicular traffic congestion anticipated, it is important that the plans for the TODs include mitigation measures to provide for emergency vehicle access, even during periods of traffic gridlock. Possible actions included:
 - a. Using smaller, more maneuverable fire trucks,
 - b. Identifying clear paths for emergency vehicles under congested conditions,
 - c. Including staging areas for fire and EMS operations during emergencies,
 - d. To the extent possible, providing emergency response facilities within or near the study area,
 - e. Designating helicopter landing areas.
- 57. TODs are designed to minimize dependence on single-occupant vehicles, and some TOD proponents see vehicular traffic congestion as a useful incentive for transit and non-motorized travel. Accepting LOS F in some locations as proposed could have negative effects on rubber-tired transit and paratransit modes. Various bus modes, including connector, commuter and bus rapid transit vehicles, as well as paratransit modes such as vanpools, carpools, taxis, and car sharing would be hampered by higher levels of congestion. Where possible, the development plans should include provisions for operation of transit and paratransit vehicles during congested periods. Intelligent Transportation Systems (ITS) concepts such as Bus Lanes with Intermittent Priority should be considered in the design of the TODs.
- 58. Preferential parking pricing for high occupancy vehicles and higher exit tolls on the Toll Road during congested periods should be considered as a congestion mitigation technique.
- 59. The queues reported are based on Synchro, in which upstream impacts and gridlock are not evident. A more accurate picture of the future queues can be found using an average of multiple SimTraffic runs.
- 60. As new streets are added and existing roadways are improved and widened, access management standards should be applied.
- 61. Future detailed analysis and traffic studies for rezoning applications should examine details such as the addition of turn lanes and turn lane lengths.

62. Care should be taken with triple lefts and opposing dual lefts as are shown in Figures 4.9A-C of the ***Transportation Study***. VDOT may agree with the proposed protected left for triple lefts if and only if the necessary geometry which includes 15 ft wide turn lanes and 5 ft separation exists. The feasibility of these improvements should be considered knowing the geometric requirements and which intersections have limited right-of-way availability. Those that do not have sufficient right-of-way should be modeled as split phasing.

Summary

Due to significant concerns with the cumulative impacts of other development within the region, deficiencies in the Synchro analyses, and trip making assumptions the VDOT does not believe that this report contains “sufficient information to evaluate the system of new and expanded transportation facilities” and suggests that the report be refined and resubmitted incorporating the comments within this letter to determine if the transportation facilities will indeed support the proposed development as required by 24VAC30-155-30.

Furthermore, an inherent inconsistency is introduced in the proposed amendment by introducing a level of service standard of E, but not proposing mitigation measures to achieve this standard. If Fairfax County finds it necessary to stipulate a level of service standard the following methods should be considered: reduced intensity of development, an expanded transportation network, or a level of service standard of F. As noted in VDOT’s Traffic Impact Analysis Regulations Administrative Guidelines, “just identifying future transportation needs is not sufficient.”

The lack of any analysis of the DTR, the imbalance between development intensity and transportation capacity, and the failure to address level of service F situations are all significant concerns. Without addressing these major items, if all development proposed by the Comprehensive Plan Amendment be approved and constructed, there may be failing levels of service many hours of the day with constrained/limited mobility for the movement of goods and people.

Please contact me if you have any questions.

Sincerely,

Paul J. Kraucunas

Paul J. Kraucunas, P.E.
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